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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,680	05/01/2007	Sungho Jin	15977-35	9799
28221 7590 03/15/2010 PATENT DOCKET ADMINISTRATOR LOWENSTEIN SANDLER PC 65 LIVINGSTON AVENUE ROSELAND, NJ 07068			EXAMINER VDAYAKUMAR, KALLAMBELLA M	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 03/15/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/584,680

**Applicant(s)**

JIN, SUNGHO

**Examiner**

KALLAMBELLA VIJAYAKUMAR

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-18, 20-23 and 29 is/are rejected.
- 7) ☒ Claim(s) 11, 19 and 24-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (P/TO/SB/08)  
Paper No(s)/Mail Date 11/06/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

- This is a 371 of PCT/US04/43458 and claims benefit over US Provisional 60/533,618 filed December 31, 2003.
- Claims 1-29 are pending with the application.
- The examiner has considered the IDS filed 11/06/2006 and the documents cited therein.

#### ***Claim Rejections - 35 USC § 102***

#### ***Claim Rejections - 35 USC § 103***

- The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

- The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 1-5, 7-10, 12-18, 20-23 and 29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bishop et al (US 2001/0008157).
- The examiner makes of record that instant claim 3 recites a broad range of components followed by a narrow range. For examination purposes, the examiner asserts that the narrow range recited in instant claim 3 is merely exemplary range, and thus, the prior art will be applied against the broadest range recited in instant claim 3.

Bishop teaches a device having electrical contacts formed of a noble metal alloy containing insoluble dispersoid particles in the matrix offering strengthening mechanism [Abstract; Fig-1, 4]. The dispersoid/precipitates in the metal matrix had size less than 50 nm and were present in a volume fraction of 0.5-5 % [0035]. The examples of the base matrix materials include Rh, Au, Pt, Pd and Ru metals and their alloys containing 0.1-30 wt% alloying element [0027-0033].

The dispersoid particles in the metal matrix had a particle size of 2-50 nm and were present in an amount 0.5-5 v%. The examples of dispersoids include WC, SiC, TaC, TiC, ZrC, TiN, intermetallics, nanotubes and nanowires [0041]. The components were deposited by sputtering, e-beam evaporation, IBAAD and electrolytic deposition or electroless plating with simultaneous trapping during deposition of dispersoid particles mixed in a liquid i.e. electrolyte [0038, 0042]. The co-deposited or co-sputtered films were heat treated in reducing atmosphere/vacuum [0043]. Ref to characteristics in the claims, the prior art composition, components and structure are either same or substantially same as that claimed by the applicants and anticipates the instant claimed characteristics because where the claimed and prior art

products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. <MPEP 2112.01[R3]-I>. The structure in the Figures 5-7 meets the structural limitations in claims 17-18. The MEMS microrelay device meets the articles in claims 20-21. The compaction of the components and sintering it in claim-29 is anticipated in forming sputter targets. All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Bishop et al be insufficient to anticipate the instant claims, the instant claimed article and the method steps nonetheless would have been obvious to a person of ordinary skilled in the art over the disclosure because the reference teaches each of the claimed ingredients within the article and a method of making it, and the burden is upon the applicant to prove otherwise. [MPEP 2112 [R-3-V].

2. Claims 1-10, 14-18, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,759,230).

- The use of phrase "conducting high power electrical current" in the claim-1 have not been treated with patentability. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See In re Otto, 312 F.2d 937,938,136 USPQ 458, 459 (CCPA 1963). <MPEP 2111-02[R3]-II>

Chow et al teach a composite film containing metals such as Cr, Co, Ni, Ag and containing nanoparticles of alloys with a particle size of 1-100 nm coated over a substrate for electronic, magnetic and structural applications. The composite metal films contained at least one metal first component and at least one other component that is intentionally included in amounts that significantly enhance the desirable properties of the film. The metal ceramic composites include at least 50 volume percent of the metal in the form of an metal or an alloy (Cl-1, Ln 11-13; Cl-2, Ln 57-64; Cl-4, Ln 41-65). A specific example contained Cu, Ni and Ni<sub>25</sub>Cu<sub>75</sub> (Cl-5, Ln 25 – Cl-6, Ln 36; Fig-2-3). The substrates for the coated films included polyimide, teflon, aluminum nitride, carbon and alumina (Cl-4, Ln 30-40; Cl-5, Ln 33-35).

The prior art fails to provide an example of a coated film containing the base metal containing the dispersion of the second component (Cl-7, Tbl-I).

However, it would have been obvious to a person of ordinary skill in the art to coat the composite films over a substrate and further use it in an electronic device with reasonable expectation of success because the prior art teaches coating composite films over substrates and suggestive of its use in electronic/magnetic devices.

Ref to claims 1, 4, 7-9, 14-16, and 22, the prior art composition, components and the structure are similar to that claimed by the applicants and similar compositions are expected to possess similar properties.

Ref to claim-2, prior art size for the nanoparticles overlap with the sizes in the claim, and prima facie obvious.

Ref claim-3, the prior art teaches the addition of the second particles in composite films and further discloses that similar composites contain more than 50 v% base metal. An addition of a small amount of the second particles will either lie close to the low end of the 0.2 % in the claim or overlap with it, and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art", or where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties, a prima facie case of obviousness exists. <MPEP 2144.05 [R-5]-I>.

Ref claims 17-18, the prior art composite film over the substrate whose structure obviously meets these limitations.

Ref claims 22-23, the prior art teaches making the composite film over a substrate by co-depositing the components.

### ***Allowable Subject Matter***

Claims 11, 19 and 24-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record neither teaches nor fairly suggest a graded structure comprising specific components and structure, or a method of making the structure comprising specific process steps and the components processed therein.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/  
March 11, 2010.

/Stanley Silverman/  
Supervisory Patent Examiner, Art Unit 1793